



## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

#### **14 CFR Part 39**

**[Docket No. FAA-2021-0543; Project Identifier AD-2021-00353-T; Amendment 39-21852; AD 2021-25-09]**

**RIN 2120-AA64**

#### **Airworthiness Directives; The Boeing Company Airplanes**

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Final rule.

**SUMMARY:** The FAA is adopting a new airworthiness directive (AD) for certain The Boeing Company Model 737-200 and -200C series airplanes. This AD was prompted by reports of nuisance stick shaker activation while the airplane was accelerating to cruise speed at the top of a climb. Investigation revealed that the activation was caused when the angle of attack (AOA) (also known as angle of airflow) sensor vanes froze and malfunctioned due to insufficient heat in certain AOA sensors to prevent ice buildup. This AD requires inspecting the AOA sensors for certain part numbers or vane shapes, and replacing any affected AOA sensor with a new or serviceable sensor. The FAA is issuing this AD to address the unsafe condition on these products.

**DATES:** This AD is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

The Director of the Federal Register approved the incorporation by reference of a certain publication listed in this AD as of [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**ADDRESSES:** For service information identified in this final rule, contact Boeing Commercial Airplanes, Attention: Contractual & Data Services (C&DS), 2600

Westminster Blvd., MC 110-SK57, Seal Beach, CA 90740-5600; telephone 562-797-1717; Internet <https://www.myboeingfleet.com>. You may view this service information at the FAA, Airworthiness Products Section, Operational Safety Branch, 2200 South 216th St., Des Moines, WA. For information on the availability of this material at the FAA, call 206-231-3195. It is also available at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2021-0543.

### **Examining the AD Docket**

You may examine the AD docket at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2021-0543; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this final rule, any comments received, and other information. The address for Docket Operations is U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE, Washington, DC 20590.

**FOR FURTHER INFORMATION CONTACT:** Jeffrey W. Palmer, Aerospace Engineer, Systems and Equipment Section, FAA, Los Angeles ACO Branch, 3960 Paramount Boulevard, Lakewood, CA 90712-4137; phone: 562-627-5351; email: [jeffrey.w.palmer@faa.gov](mailto:jeffrey.w.palmer@faa.gov).

### **SUPPLEMENTARY INFORMATION:**

#### **Background**

The FAA issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 by adding an AD that would apply to certain The Boeing Company Model 737-200 and -200C series airplanes. The NPRM published in the *Federal Register* on August 9, 2021 (86 FR 43454). The NPRM was prompted by reports of nuisance stick shaker activation while the airplane was accelerating to cruise speed at the top of a climb. Investigation revealed that the activation was caused when the AOA sensor vanes froze

and malfunctioned due to insufficient heat in certain AOA sensors to prevent ice buildup. In the NPRM, the FAA proposed to require inspecting the AOA sensors for certain part numbers or vane shapes, and replacing any affected AOA sensor with a new or serviceable sensor. The FAA is issuing this AD to prevent the AOA sensor vanes from being immobilized, which could result in unreliable or inaccurate AOA sensor data being transmitted to airplane systems, and consequent loss of control of the airplane.

## **Discussion of Final Airworthiness Directive**

### **Comments**

The FAA received a comment from the Air Line Pilots Association, International (ALPA) who supported the NPRM without change.

The FAA received an additional comment from Boeing. The following presents the comment received on the NPRM and the FAA's response.

### **Request for Clarification of Affected Airplane Model**

Boeing asked that clarification be added to the Summary, Background, and Unsafe Condition sections of the proposed AD to specify that the originating AOA vane immobilization report was not on a Model 737 airplane. Boeing stated that this would clarify the service history and align the text with the language used in Boeing Alert Service Bulletin 737-27A1324, dated March 2, 2021.

The FAA agrees to provide clarification, here in the comment section instead of throughout the body of this AD. Initially, AOA vane immobilization was reported on a Model 717 airplane; the associated design issues have been addressed for that airplane model. Although no Model 737-200 airplane has experienced an in-flight incident related to the identified unsafe condition, the design of the AOA sensor vanes is similar on Model 737-200 airplanes. Therefore, the FAA has determined that this AD is necessary to address the unsafe condition on these airplanes. The FAA has not changed this final rule as a result of this comment.

## Conclusion

The FAA reviewed the relevant data, considered any comments received, and determined that air safety requires adopting this AD as proposed. Except for minor editorial changes, and any other change described previously, this AD is adopted as proposed in the NPRM. None of the changes will increase the economic burden on any operator.

## Related Service Information under 1 CFR Part 51

The FAA reviewed Boeing Alert Service Bulletin 737-27A1324, dated March 2, 2021. This service information specifies procedures for doing a general visual inspection of the left- and -right-side AOA sensor vane shapes, or inspecting the left and right AOA sensors, to determine the part number, and replacing any affected AOA sensor with a new or serviceable sensor. This service information is reasonably available because the interested parties have access to it through their normal course of business or by the means identified in ADDRESSES.

## Costs of Compliance

The FAA estimates that this AD will affect 11 airplanes of U.S. registry. The FAA estimates the following costs to comply with this AD:

Estimated costs				
Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
Inspection	1 work-hour X \$85 per hour = \$85	\$0	\$85	\$935

\*

The FAA estimates the following costs to do any necessary replacements that will be required based on the results of the inspection. The agency has no way of determining the number of aircraft that might need these replacements:

### On-condition costs

Action	Labor cost	Parts cost	Cost per product
Replacement	3 work-hours X \$85 per hour = \$255	\$54,000	\$54,255

### Authority for this Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. Subtitle VII: Aviation Programs, describes in more detail the scope of the Agency's authority.

The FAA is issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: General requirements. Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

### Regulatory Findings

This AD will not have federalism implications under Executive Order 13132. This AD will not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify that this AD:

- (1) Is not a "significant regulatory action" under Executive Order 12866,
- (2) Will not affect intrastate aviation in Alaska, and
- (3) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

## **List of Subjects in 14 CFR Part 39**

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

### **The Amendment**

Accordingly, under the authority delegated to me by the Administrator, the FAA amends 14 CFR part 39 as follows:

### **PART 39 - AIRWORTHINESS DIRECTIVES**

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

#### **§ 39.13 [Amended]**

2. The FAA amends § 39.13 by adding the following new airworthiness directive:

**2021-25-09 The Boeing Company:** Amendment 39-21852; Docket No. FAA-2021-0543; Project Identifier AD-2021-00353-T.

#### **(a) Effective Date**

This airworthiness directive (AD) is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

#### **(b) Affected ADs**

None.

#### **(c) Applicability**

This AD applies to The Boeing Company Model 737-200 and -200C series airplanes, certificated in any category, as identified in Boeing Alert Service Bulletin 737-27A1324, dated March 2, 2021.

#### **(d) Subject**

Air Transport Association (ATA) of America Code 27, Flight Control System.

#### **(e) Unsafe Condition**

This AD was prompted by reports of nuisance stick shaker activation while the airplane was accelerating to cruise speed at the top of a climb. Investigation revealed that the activation was caused when the angle of attack (AOA) (also known as angle of

airflow) sensor vanes froze and malfunctioned due to insufficient heat in certain AOA sensors to prevent ice buildup. The FAA is issuing this AD to prevent the AOA sensor vanes from being immobilized, which could result in unreliable or inaccurate AOA sensor data being transmitted to airplane systems, and consequent loss of control of the airplane.

**(f) Compliance**

Comply with this AD within the compliance times specified, unless already done.

**(g) Required Actions for Group 2 Airplanes**

For airplanes identified as Group 2 in Boeing Alert Service Bulletin 737-27A1324, dated March 2, 2021: Within 120 days after the effective date of this AD, inspect the AOA sensor, using a method approved in accordance with the procedures specified in paragraph (j) of this AD

**(h) Required Actions for Group 1 Airplanes**

Except as specified in paragraph (i) of this AD: At the applicable times specified in paragraph 1.E., “Compliance,” of Boeing Alert Service Bulletin 737-27A1324, dated March 2, 2021, do all applicable actions identified as “RC” (required for compliance) in, and in accordance with, the Accomplishment Instructions of Boeing Alert Service Bulletin 737-27A1324, dated March 2, 2021.

**(i) Exception to Service Information Specifications**

Where Boeing Alert Service Bulletin 737-27A1324, dated March 2, 2021, uses the phrase “the original issue date of this service bulletin,” this AD requires using “the effective date of this AD.”

**(j) Alternative Methods of Compliance (AMOCs)**

(1) The Manager, Los Angeles ACO Branch, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or local

Flight Standards District Office, as appropriate. If sending information directly to the manager of the certification office, send it to the attention of the person identified in Related Information. Information may be emailed to:

9-ANM-LAACO-AMOC-Requests@faa.gov.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the responsible Flight Standards Office.

(3) An AMOC that provides an acceptable level of safety may be used for any repair, modification, or alteration required by this AD if it is approved by The Boeing Company Organization Designation Authorization (ODA) that has been authorized by the Manager, Los Angeles ACO Branch, FAA, to make those findings. To be approved, the repair method, modification deviation, or alteration deviation must meet the certification basis of the airplane, and the approval must specifically refer to this AD.

(4) For service information that contains steps that are labeled as Required for Compliance (RC), the provisions of paragraphs (j)(4)(i) and (ii) of this AD apply.

(i) The steps labeled as RC, including substeps under an RC step and any figures identified in an RC step, must be done to comply with the AD. If a step or substep is labeled “RC Exempt,” then the RC requirement is removed from that step or substep. An AMOC is required for any deviations to RC steps, including substeps and identified figures.

(ii) Steps not labeled as RC may be deviated from using accepted methods in accordance with the operator’s maintenance or inspection program without obtaining approval of an AMOC, provided the RC steps, including substeps and identified figures, can still be done as specified, and the airplane can be put back in an airworthy condition.



**(k) Related Information**

For more information about this AD, contact Jeffrey W. Palmer, Aerospace Engineer, Systems and Equipment Section, FAA, Los Angeles ACO Branch, 3960 Paramount Boulevard, Lakewood, CA 90712-4137; phone: 562-627-5351; email: jeffrey.w.palmer@faa.gov.

**(l) Material Incorporated by Reference**

(1) The Director of the Federal Register approved the incorporation by reference (IBR) of the service information listed in this paragraph under 5 U.S.C. 552(a) and 1 CFR part 51.

(2) You must use this service information as applicable to do the actions required by this AD, unless the AD specifies otherwise.

(i) Boeing Alert Service Bulletin 737-27A1324, dated March 2, 2021.

(ii) [Reserved]

(3) For service information identified in this AD, contact Boeing Commercial Airplanes, Attention: Contractual & Data Services (C&DS), 2600 Westminister Blvd., MC 110-SK57, Seal Beach, CA 90740-5600; telephone 562-797-1717; Internet <https://www.myboeingfleet.com>.

(4) You may view this service information at the FAA, Airworthiness Products Section, Operational Safety Branch, 2200 South 216th St., Des Moines, WA. For information on the availability of this material at the FAA, call 206-231-3195.

(5) You may view this service information that is incorporated by reference at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, [fr.inspection@nara.gov](mailto:fr.inspection@nara.gov), or go to: <https://www.archives.gov/federal-register/cfr/ibr-locations.html>.

Issued on December 2, 2021.

Lance T. Gant, Director,  
Compliance & Airworthiness Division,  
Aircraft Certification Service.

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